

## REMARKS

The present application includes pending claims 1-12 and 21. Claims 1-3, 12 and 21 stand rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent No. 6,054,061 ("Bayes"). Claims 1-3, 10, 12 and 21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bayes in view of United States Patent No. 6,106,899 ("Nakagawa"). Claims 4-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bayes in view of Nakagawa and further in view of United States Patent No. 5,861,076 ("Adlam"). Claim 9 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Bayes in view of Nakagawa and Adlam, and further in view of United States Patent No. 5,910,255 ("Noddin"). Claim 11 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Bayes in view of Nakagawa and further in view of United States Patent No. 6,284,309 ("Bishop"). Applicants respectfully traverse these rejections at least for the reasons set forth below and previously during prosecution of the present application.

### **35 U.S.C. § 102 (Anticipation)**

Applicants first turn to the rejection of claims 1-3, 12 and 21 under 35 U.S.C. 102(e) as being anticipated by Bayes. Claim 1 recites a process for preparing a roughened copper surface which involves the step of contacting a copper surface with an adhesion promoting composition. The adhesion promoting composition contains an oxidizer (e.g. hydrogen peroxide), a pH adjuster (an acid), a topography modifier and a uniformity enhancer. The topography modifier is described in Applicants' specification as a five membered aromatic fused N-heterocyclic ring compound with at least one nitrogen atom in the N-heterocyclic ring, where at least one of the nitrogen atoms in the

heterocyclic ring is bonded to a hydrogen atom. Suitable topography modifiers include 1H-benzotriazole. The uniformity enhancer is described in the specification as a tetrazole. Applicants discovered that this unique combination of a tetrazole with the oxidizer, the pH adjuster and the topography modifier led to the formation of a uniformly roughened surface.

Bayes also teaches the application of an adhesion promoting composition to a copper surface. The composition of Bayes contains an oxidizer, an acid, an amine or quaternary ammonium compound, and an optional "corrosion inhibitor." Bayes does not teach the use of components named "topography modifier" or "uniformity enhancer." However, the specification of Bayes states that:

The corrosion inhibitor, when used, is typically selected from one or more of a triazole, tetrazole or imidazole. Unsubstituted and substituted triazoles and benzotriazoles are preferred.

Col. 5, lines 32-36. The position taken in the Office action appears to be that the optional corrosion inhibitor of Bayes could be a mixture of a benzotriazole (a "topography modifier" according to the present invention) and a tetrazole (a "uniformity enhancer" according to the present invention). In other words, since the specification of Bayes uses the language "typically selected from **one or more of**," it necessarily teaches the particular combination of a benzotriazole with a tetrazole, thereby arriving at the adhesion promoting composition used in applicants' inventive process.

Applicants submit that Bayes does not teach the particular combination claimed by Applicants, and therefore does not anticipate the presently pending claims.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). . . . “The identical invention must be shown in as complete detail as is contained in the . . . claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

MPEP § 2131.

A single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art. *See, e.g., In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990) (“the reference must describe the applicant’s claimed invention sufficiently to have placed a person of ordinary skill in the field of the invention in possession of it”).

*Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

Applicants’ claim 1 employs an adhesion promoting composition which contains the unique combination of tetrazole, oxidizer, pH adjuster and topography modifier. This specific combination is simply not found in Bayes. The fact that a person following Bayes could choose to employ the optional “corrosion inhibitor,” in which case that person could choose to select *more than one of* a triazole, tetrazole or imidazole, in which case that person might select a benzotriazole in combination with a tetrazole, does not lead to the conclusion that Bayes either (1) describes the claimed subject matter “with sufficient precision and detail to establish that the subject matter existed in the prior art” or (2) places “a person of ordinary skill in the field of the invention in possession of it.” The vague disclosure in Bayes of the possible use of a tetrazole certainly does not rise to the level of showing “[t]he identical invention . . . in as complete detail as is contained in the . . . claim.” It is notable that the Bayes specification provides no further detail on the use of a tetrazole and in fact none of the 114 examples disclosed in Bayes employs a tetrazole.

Thus, Applicants submit that neither claim 1, nor claims 2-3, 12 and 21 which depend either directly or indirectly from claim 1, are anticipated by Bayes. Furthermore, Applicants also submit that none of claims 1-3, 12 and 21 are obvious in view of Bayes under 35 U.S.C. § 103. A skilled artisan would not find it obvious from the teachings of Bayes to select a corrosion inhibitor that is a mixture of a benzotriazole and a tetrazole. There is nothing in the specification of Bayes to suggest that such a combination would have any particular benefit. None of the 114 examples in Bayes make use of a mixture of a benzotriazole with a tetrazole. In fact, as stated above, no tetrazole is used in any example of Bayes. The focus of Bayes is instead on variations in the other components of the adhesion promoting composition, in particular, the amine component and the inorganic acid component.

Applicants, on the other hand, discovered that there is an unexpected benefit to adding a tetrazole to an adhesion promoting composition which contains an oxidizer, a pH adjuster and a topography modifier. In particular, the use of a tetrazole leads to a more uniformly etched copper surface. In order to overcome a previous rejection based on the Ferrier (6,162,503) patent, Applicants submitted a declaration of Applicant Roger Bernards which describes the unexpected and unique nature of this discovery. Applicants refer the Examiner to Mr. Bernards' declaration, submitted September 15, 2003, as evidence of the nonobviousness of claims 1-3, 12 and 21 over Bayes.

### **35 U.S.C. § 103 (Non-obviousness)**

Applicants next turn to the rejection of claims 1-12 and 21 as being unpatentable over Bayes in view of Nakagawa, either by itself or in combination with Adlam, Noddin

and/or Bishop. Applicants respectfully submit that they completed their invention prior to the effective date of Nakagawa.

If the application claims foreign priority under 35 U.S.C. 119(a)-(d) or 365(a), the effective filing date is the filing date of the U.S. application,.... The filing date of the foreign priority document is not the effective filing date, although the filing date of the foreign priority document may be used to overcome certain references.

Manual of Patent Examining Procedure (MPEP) at § 706.02(V). Thus, the effective date of Nakagawa is July 16, 1998, despite the fact that it claims priority to an earlier Japanese application.

A Declaration Under 37 C.F.R. § 1.131 and photocopies of laboratory notebook pages that antedate the effective date of Nakagawa are enclosed with this Response. Thus, the Applicants submit that Nakagawa, which was used to reject all the pending claims of the present application under 35 U.S.C. 103(a), is not prior art with respect to these claims. At least for this reason, the Applicants respectfully submit that all claims of the present application should be in condition for allowance.

By submitting the enclosed Declaration Under 37 C.F.R. § 1.131, the Applicants are not conceding that the pending claims are otherwise obvious in view of the cited references. Notwithstanding the enclosed Declaration, the Applicants traverse the obviousness rejections for at least the following reasons (some of which have been articulated in prior submissions):

1. Bayes cannot be properly combined with Nakagawa because the references are directed to two completely different aspects of multilayer printed circuit

board (PCB) manufacture. Bayes has a purpose similar to the Applicants' invention, a composition that modifies a copper surface to improve its adhesiveness to other surfaces. Nakagawa, on the other hand, is directed to an aqueous surface coating process that neither etches nor oxidizes a metal surface.

2. A skilled artisan would not find it obvious to combine the teachings of Bayes with Adlam to arrive at the post-dip step that is recited in applicants' claims. Adlam pertains to a more traditional black oxide coating process, whereas Bayes pertains to an alternative oxide process in which the copper surface is both etched and modified.

3. A skilled artisan would not find it obvious to combine the teachings of Bayes with Bishop to arrive at the supplemental use of a copper salt that is recited in applicants' claim 11. Bishop makes use of a copper complex to ostensibly promote adhesion. However, the copper complex of Bishop is always used in conjunction with a "copper complexing agent." See Col. 4, lines 2-3. By inference, the copper complex and the copper complexing agent of Bishop work in conjunction to achieve the desired adhesion characteristics, which apparently involves precipitating copper from the solution onto the copper surface. Bayes, by way of distinction, does not disclose the use of a copper complexing agent, and it is submitted that the composition of Bayes primarily etches, or **removes**, copper from the surface rather than precipitating additional copper onto the surface.

### **Conclusion**

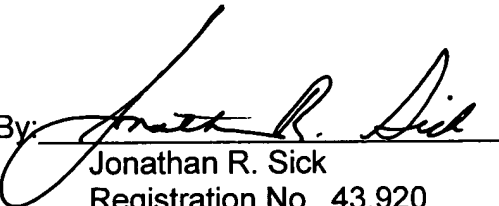
For the reasons explained above, and as supported by the two separate declarations referred to above, none of the claims in the present application are either anticipated under 35 U.S.C. § 102(e) or obvious under 35 U.S.C. § 103(a). Applicants

have shown that this application satisfies all the legal requirements pointed out by the Examiner. Therefore, the Examiner is respectfully requested to prepare a Notice of Allowability allowing all the pending claims 1-12 and 21.

If the Examiner has any questions or the Applicants can be of any assistance, the Examiner is invited and encouraged to contact the undersigned at the number listed below. The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Account No. 13-0017.

Respectfully submitted,

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